

# **Biological Assessment Seawall Long-Term Maintenance Project**

**Henderson Field Airport  
Midway Atoll National Wildlife Refuge/  
Battle of Midway National Memorial**



U.S. FISH AND WILDLIFE SERVICE  
Midway Atoll National Wildlife Refuge  
AND



FEDERAL AVIATION ADMINISTRATION  
Western Pacific Region

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## **ACRONYMS & ABBREVIATIONS**

BA	Biological Assessment
BMP	Best management practice
CFR	Code of Federal Regulations
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
FAA	Federal Aviation Administration
MMPA	Marine Mammal Protection Act
MHI	Main Hawaiian Islands
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
NWHI	Northwest Hawaiian Islands
NWR	National Wildlife Refuge (or Refuge)
PIFWO	Pacific Islands Fish and Wildlife Office
PMNM	Papahānaumokuākea Marine National Monument (or Monument)
PND	PND Engineers, Inc.
RSA	Runway Safety Area
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service (or Service)

# 1 Background

The U.S. Fish and Wildlife Service (Service) and the Federal Aviation Administration (FAA) propose to conduct repairs as needed over the next ten years (2017-2027) along a 5,720-foot-long seawall located on Midway Atoll’s Sand Island. A summary of the proposed action is presented in Section 2 of this document. Appendix A of the Environmental Assessment (EA) prepared for this project (USFWS & FAA 2017) contains a detailed description.

The action is needed because the existing seawall, constructed in 1957-58, is aging and failing. The soils behind the seawall consist of unconsolidated fill that has eroded quickly after previous seawall breaches (Figure 1).

The purpose of the action is to control this erosion and to protect Refuge resources, including Henderson Field taxiway, runway, and runway safety area (RSA). The airport at Henderson Field is critical to providing access for government administration and research operations at Midway Atoll National Wildlife Refuge (Refuge) and the western portions of Papahānaumokuākea Marine National Monument (PMNM or Monument). It also serves a critical role as an FAA-approved emergency landing field that is essential to trans-Pacific airborne transportation.

The purpose of this Biological Assessment (BA) is to address the effect of the Seawall Long-Term Maintenance Project on species listed as endangered or threatened under the Endangered Species Act (ESA) and to present information relative to compliance with the Magnuson-Stevens Act regarding Essential Fish Habitat (EFH).

## 1.1 Endangered Species Act

This BA documents the Services’ determination of whether the issuance of federal permits and resulting federal action would adversely affect species listed under the ESA or their designated critical habitat. The Service has prepared this BA as part of the process of “informal consultation,” as defined the Consultation Handbook (USFWS & NMFS 1998), which includes the following objectives:

- Clarify whether and what listed, proposed, and candidate species or designated or proposed critical habitats may be in the action area;
- Determine what effect the action may have on these species or critical habitats;
- Explore ways to modify the action to reduce or remove adverse effects to the species or critical habitats;
- Determine the need to enter into formal consultation for listed species or designated critical habitats, or conference for proposed species or proposed critical habitats; and
- Explore the design or modification of an action to benefit the species.

This project has the potential to impact the following ESA-listed species that occur in the area:

**Table 1-1 – ESA-listed species**

<b>Species</b>	<b>ESA Listing Status</b>	<b>Determination</b>
<b>Short-tailed albatross (<i>Phoebastria albatrus</i>)</b>	Endangered	May affect, but is not likely to adversely affect

<b>Species</b>	<b>ESA Listing Status</b>	<b>Determination</b>
<b>Laysan duck</b> ( <i>Anas laysanensis</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Laysan finch</b> ( <i>Telespiza cantans</i> )	Endangered	Not likely to affect
<b>Nihoa finch</b> ( <i>Telespiza ultima</i> )	Endangered	Not likely to affect
<b>Nihoa millerbird</b> ( <i>Acrocephalus familiaris kingi</i> )	Endangered	Not likely to affect
<b>Green sea turtle</b> ( <i>Chelonia mydas</i> )	Threatened (Central North Pacific DPS)	May affect, but is not likely to adversely affect
<b>Hawksbill sea turtle</b> ( <i>Eretmochelys imbricata</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Loggerhead sea turtle</b> ( <i>Caretta caretta</i> )	Endangered (North Pacific Ocean DPS)	May affect, but is not likely to adversely affect
<b>Olive ridley sea turtle</b> ( <i>Lepidochelys olivacea</i> )	Threatened	May affect, but is not likely to adversely affect
<b>Leatherback sea turtle</b> ( <i>Dermochelys coriacea</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Hawaiian monk seals</b> ( <i>Neomonachus schauinslandi</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Hawaiian monk seals Critical Habitat</b>	N/A	Not likely to affect
<b>False killer whale</b> ( <i>Pseudorca crassidens</i> )	Endangered (Main Hawaiian Islands Insular DPS)	May affect, but is not likely to adversely affect
<b>False killer whale</b> ( <i>Pseudorca crassidens</i> )	Not Listed (Northwestern Hawaiian Islands)	Not listed
<b>Sperm whale</b> ( <i>Physeter macrocephalus</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Fin whale</b> ( <i>Balaenoptera physalus</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Blue whale</b> ( <i>Balaenoptera musculus</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Sei whale</b> ( <i>Balaenoptera borealis</i> )	Endangered	May affect, but is not likely to adversely affect
<b>Humpback whale</b> ( <i>Megaptera novaeangliae</i> )	Delisted (Hawai'i DPS)	Delisted in the project area

<b>Species</b>	<b>ESA Listing Status</b>	<b>Determination</b>
<b>Kāmanomano</b> ( <i>Cenchrus agrimonioides</i> <i>var. laysanensis</i> )	Endangered	Not likely to affect
<b>Lo'ulu, Nihoa fan palm</b> ( <i>Pritchardia remota</i> )	Endangered	Not likely to affect
<b>Pōpolo</b> ( <i>Solanum nelsonii</i> )	Endangered	Not likely to affect

## **1.2 Magnuson-Stevens Act**

The BA also presents information relative to compliance with the Magnuson-Stevens Act, responsible for the conservation and management of fishery resources found off the coasts of the United States. The Service is consulting with the National Marine Fisheries Service (NMFS), as required by the Act, to determine if the proposed action may adversely affect any “essential fish habitat (EFH),” as defined under the Act. The statute defines EFH as “those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.” 16 U.S.C. 1802(10). Adverse effects on EFH are defined further as “any impact that reduces the quality and/or quantity of EFH,” and may include “site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions.” 50 C.F.R. § 600.810(a).

This BA includes information in support of the consultation process and to assist NMFS in making a determination of the project’s effects on EFH and to provide conservation recommendations to the lead agency on actions that would adversely affect such habitat.



## **2 Description of the Action & Action Area**

### **2.1 Proposed Action**

The Service proposes to replace sections of Sand Island's approximate 5,720-foot south seawall as needed to protect Henderson Field and to control erosion of wildlife habitat along the southeast side of Sand Island. For regulatory permitting purposes, including Department of the Army permits under 33 CFR part 325; the Service has established a ten-year planning period for proposed repairs.

Repairs would be made by replacing damaged sheet pile with armor rock revetment. Revetments would consist of large (2- to 3-foot diameter) armor rock placed over smaller underlayer rocks. Construction materials would be brought to the Refuge from existing quarries on the Pacific Coast, Alaska and/or Hawai'i.

Materials for this project would be brought to Midway via barge from Honolulu. Barging of materials is covered under the PMNM Permit, with appropriate provisions for avoiding adverse effects to protected resources, including materials and vessel cleaning procedures, invasive species protocols, vessel tracking, and strike avoidance measures. These procedures will be incorporated within the Implementation Plan for this project (Appendix B).

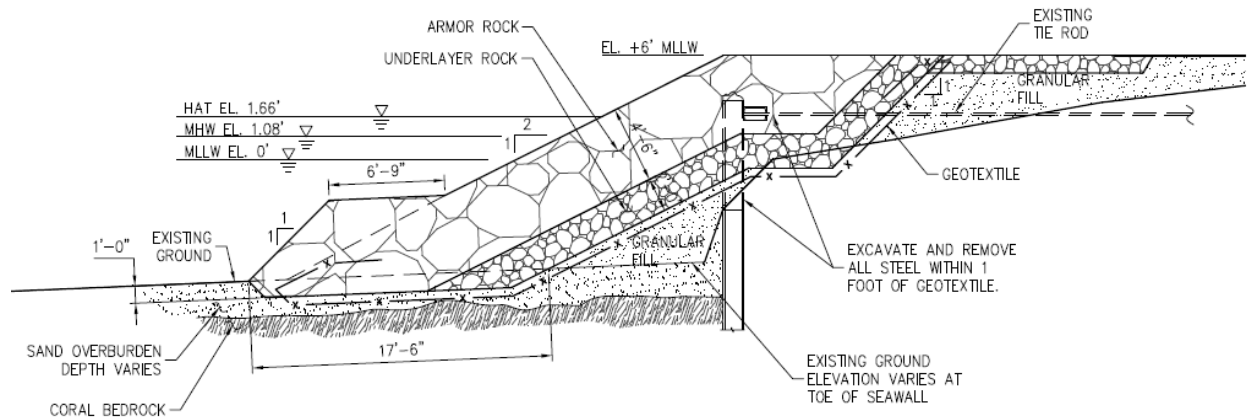
Repairs would take place in an annual cycle following the Implementation Plan. To avoid impacts to breeding birds, construction would generally occur from mid-August through October of any given year, depending on consultations with refuge staff and necessary agencies. Because repairs would be made on an as-needed basis, some years may have little to no active construction while other years may have multiple or large repairs.

The cumulative footprint of the "Maximum Construction Scenario" includes the footprint of all rock revetment that could be installed along the 5,720 linear feet seawall. The total footprint would be approximately 100 feet wide, with approximately 50 feet of rock being placed within marine waters (6.6 acres) and 50-foot construction footprint on uplands adjacent to the seawall (6.6 acres) for a total area of 13.2 acres.

Previous permitting efforts of seawall repairs required the completion of a coral transplantation project in order to mitigate for unavoidable impacts. The success of previous and future transplantation project would be analyzed by the Service during surveys of the site. Pending these analyses and consultations with Pacific Islands Fish and Wildlife Office (PIFWO) and National Oceanic and Atmospheric Administration (NOAA) Fisheries, additional mitigation measures may be incorporated into the project.

Additional details of the proposed action and mitigation are presented in Appendix A, Project Description.





*Figure 2-1 – Cross-section view of typical armor rock revetment*



*Figure 2-2 – Completed armor rock revetment on Tern Island*

## **2.2 Action Area**

Midway Atoll is an insular territory of the United States administered by FWS as a National Wildlife Refuge and is part of the Northwest Hawaiian Islands (NWHI) archipelago that lies to the northwest of the seven main Hawaiian Islands (Figure 2-4). The Refuge consists of three islands and a lagoon, enclosed by a circular coral reef (atoll) approximately five miles in diameter, and is surrounded on all sides by the Pacific Ocean (Figure 2-3). The largest island (and action area), Sand Island, has an area of about 1,100 acres, and has a permanent population that varies from 50

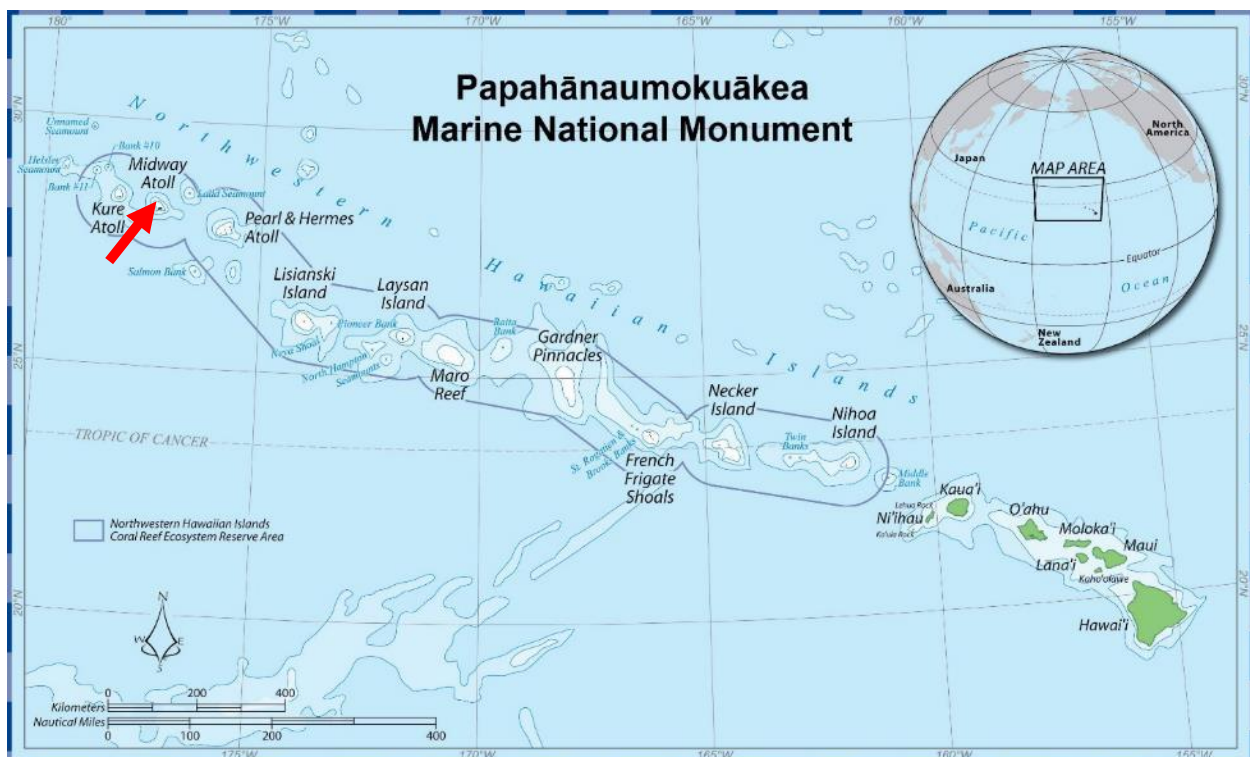
to 100 people. Eastern Island covers 334 acres and has been uninhabited since 1970. Spit Island is an ephemeral sand spit with a current area of about 14 acres, and has never been inhabited.

- Ecoregion Number and Name: Region 1, Pacific Islands Ecoregion.
- County and State: Midway Atoll is not part of any State.
- Section, township, and range (or latitude and longitude): Midway Atoll is at latitude 28.2° N, longitude 177.3° W.
- Distance and direction to nearest town: Midway Atoll is located approximately 2,012 km (1,250 miles) northwest of Honolulu, Hawai‘i.

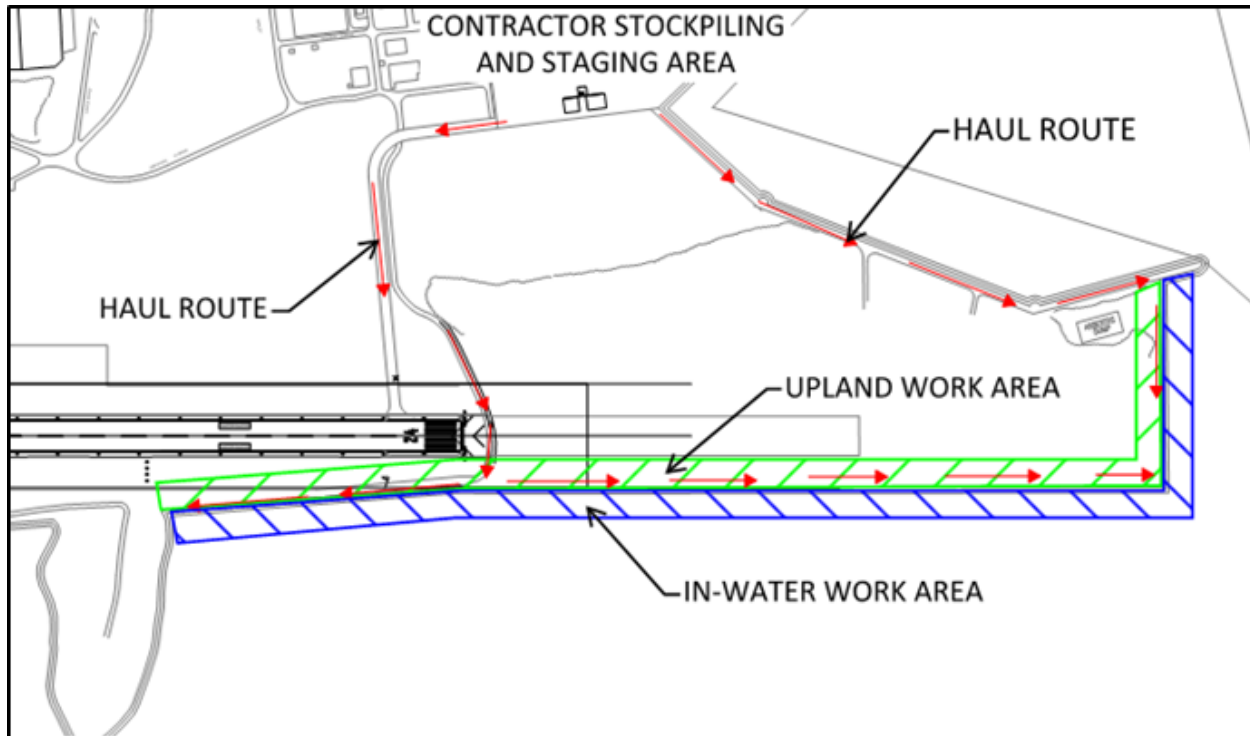


*Figure 2-3 – Satellite imagery of Midway Atoll, credit NASA*

The affected areas on Midway Atoll include the upland and in-water work areas, haul routes, and the contractor stockpiling and staging area (Figure 2-5). The stockpiling area is adjacent to the inner harbor, where barges will arrive from Honolulu, HI.



*Figure 2-4 – Midway Atoll is among the Northwestern Hawaiian Islands*



*Figure 2-5 – Proposed staging area and haul route*



### 3 Species and Habitat:

A marine survey of the area was conducted by PIFWO and NOAA staff in February 2013 and again in April 2016 to determine presence and density of protected species and sensitive habitat within the project area (Figure 3-1) (Godwin 2013; Klavitter 2013b; USFWS PIFWO 2016).

The 2016 survey covered approximately 8.02 acres of upland and nearshore areas, including the full length of seawall that may be included in future repairs. Within that range, 97 reef fish, nine coral species, 32 non-coral macro-invertebrates, and 28 algae species were identified. Protected species, including green sea turtle (*Chelonia mydas*) and the Hawaiian monk seal (*Neomonachus schauinslandi*) were observed in the nearshore project area during the survey (USFWS PIFWO 2016).

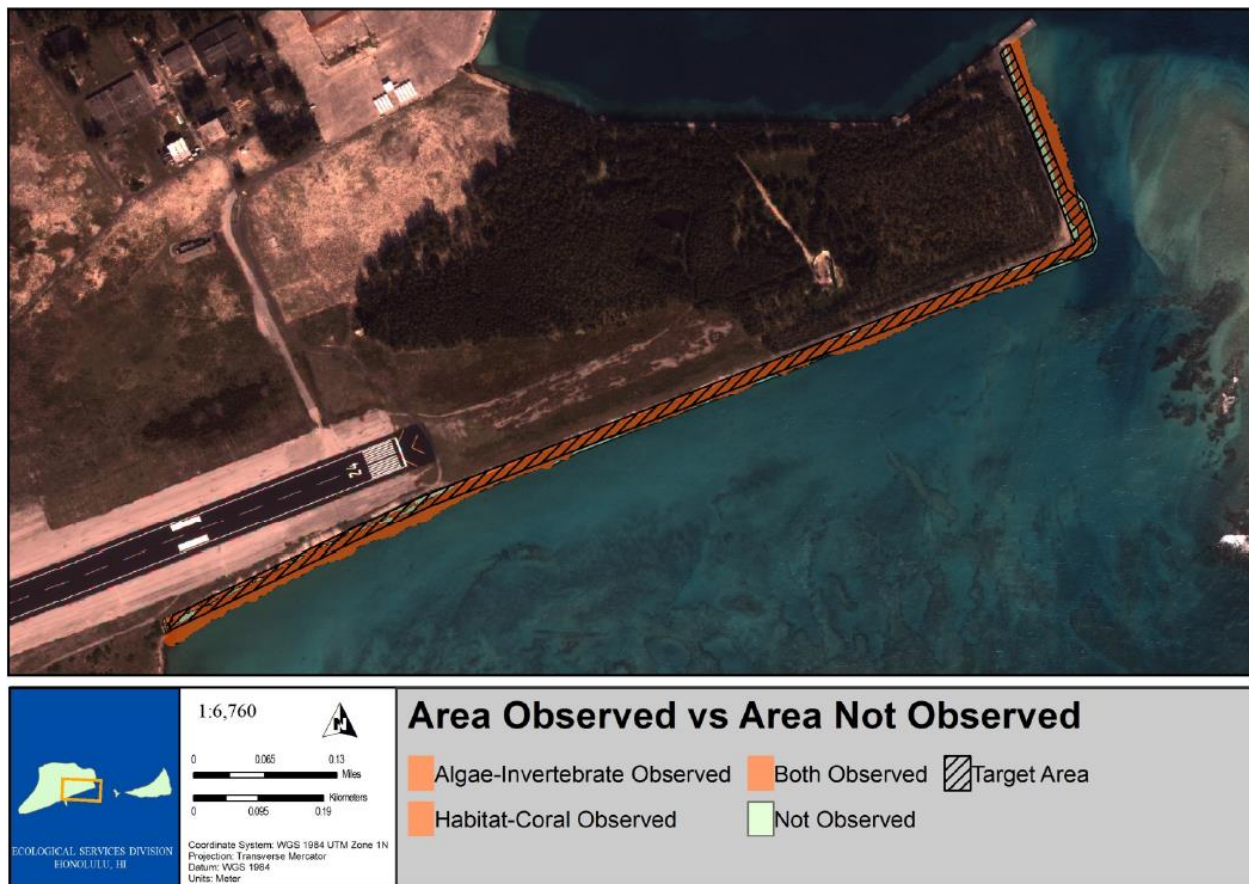


Figure 3-1 – Areas of surveyed (orange) and interpolated (green) project area. “Target Area” identifies anticipated area of direct impact (USFWS PIFWO 2016).

Habitat value on land is generally low due to vegetation control near runway, constant salt spray from ocean, as well as major erosion. This area of the island was added by the Navy during the Cold War (circa 1957-58) to lengthen the runway. Offshore habitat includes Category 2 (*habitat... is of high value for the evaluation species and is relatively scarce...*) Coral Reef Habitat, making this a Special Aquatic Site; however, no ESA-listed coral species were found as of April 2016. The majority of the offshore project area is categorized as reef flat (semi-exposed area between the shoreline intertidal zone and the reef crest of a fringing zone), though the boundary between

land and reef flat has become less obvious as the sheet pile has eroded and vegetation and seabird nesting areas have appeared. Debris is present in the majority of the benthic habitat adjacent to the sheet pile seawall (USFWS PIFWO 2016). The eroding area is an entrapment hazard for fledging albatross chicks, which cannot climb the steep cliffs formed by the wave action (Leary 2013).

### 3.1 ESA-listed species and/or their critical habitat within the action area:

#### 3.1.1 Short-tailed albatross (*Phoebastria albatrus*), endangered

The short-tailed albatross was listed as endangered throughout its range outside the U.S. in 1970; in 2000, this was corrected to include the U.S., thereby protecting the short-tailed albatross throughout its range. No critical habitat listings exist for short-tailed albatross. Feather hunters had reduced the population from millions to nearly disappearing in 1939, when their primary breeding grounds in Torishima, Japan were buried under a volcanic eruption. They were considered extinct until juvenile breeding pairs began to return to the island, steadily increasing the population from about ten pairs to a current estimated population of 2,200 (USFWS 2014b).

Short-tailed albatross were seldom seen in the U.S. until they began to appear at Midway between 1936 and 1941. Since then, they have returned annually, and a successful breeding pair successfully hatched the first chick in 2011. Short-tailed albatross are migratory, so they only occur at Midway Atoll from late October to early August to nest or to attempt to establish a pair bond (USFWS 2011). A single breeding pair continues to return to Midway Atoll and have hatched several chicks.

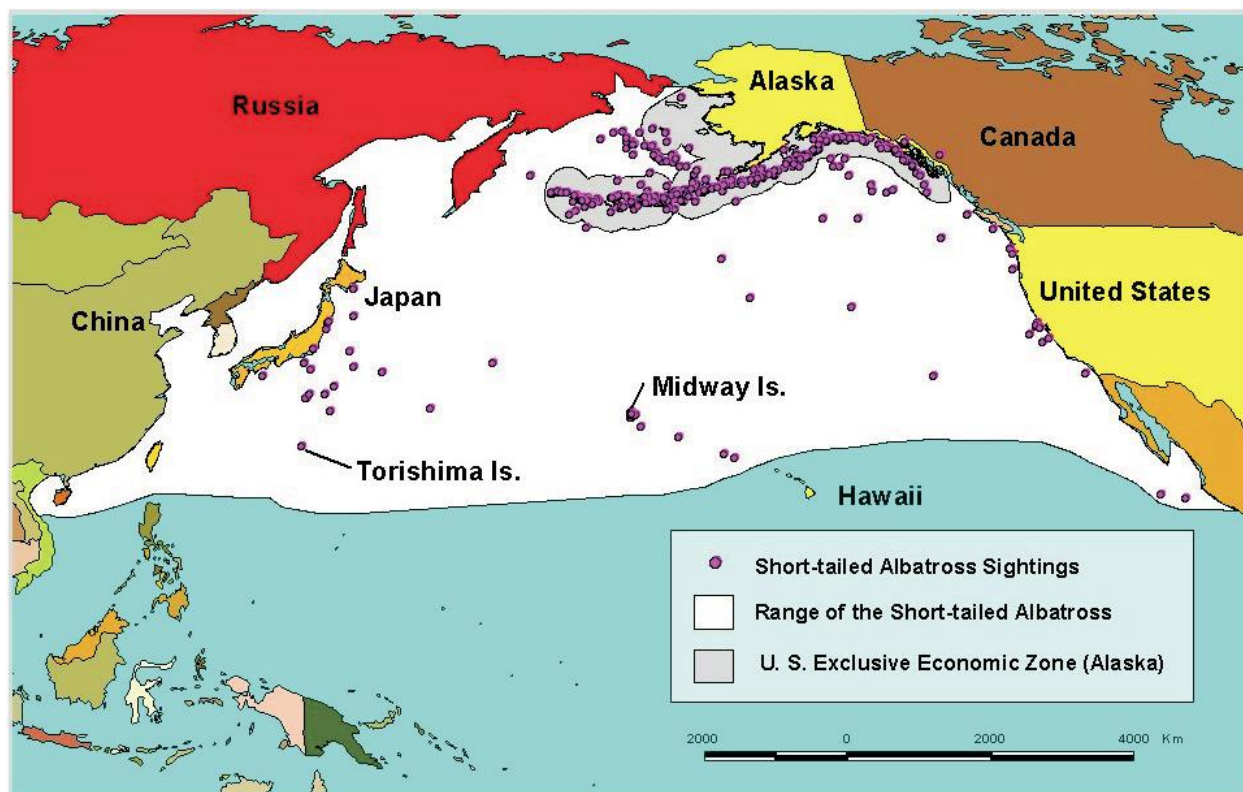


Figure 3-2 – Short-tailed albatross distribution and sightings from 1905-1996. (USFWS 2001).

This work is expected to occur prior to the seasonal return of Short-tailed albatross; therefore, it is unlikely that there will be disturbance to that species. There have been no sightings of short-tailed albatross within 100 m of the work area (USFWS unpub. data). Mitigation measures, including observers and shutdown protocols, will be used to reduce the risk of negatively impacting any short-tailed albatross.

### 3.1.2 Laysan duck (*Anas laysanensis*), endangered

The Laysan duck, once widespread throughout the Hawaiian Islands (according to fossil and historic records), is now limited to a population of about 600 individuals on Laysan Island and 100 on Midway Atoll. The endemic Laysan Island (Kuaō) population of Laysan ducks were devastated by the arrival of humans to mine guano in the 1890s, as well as by the introduction of rabbits that removed much of the vegetation. The number of Laysan Ducks reached an all-time low of 11 in 1911, prior to the species being listed as endangered under the ESA in 1967. No critical habitat listings exist for Laysan ducks (USFWS 2014b).

In 2004, 20 endangered Laysan ducks were translocated to Midway Atoll from their only extant population on Laysan Island (Reynolds et al. 2008). The birds adapted well to Sand Island and bred during their first year with 12 ducklings successfully fledging. An additional 22 ducks were transported to Midway in 2005, most of which were introduced to Eastern Island. Laysan Ducks were originally released at the Aviary and Mauka Seeps on Sand Island and the Monument and Rolando Seeps on Eastern Island. Since their release, the ducks have expanded their range on both islands (Figure 3-3) (Reynolds et al. 2012).

The Laysan duck population rose to a maximum of approximately 500 on Midway in 2008 when botulism epizootics began occurring, resulting in the death of hundreds of ducks. Steps are now taken each summer to reduce the spread of botulism. The population of Laysan ducks on Midway Atoll fluctuates but maintains above a few hundred individuals. (Klavitter et al. 2013a). A second translocation project moved 28 Laysan ducks from Sand Island to Kure Atoll Wildlife Sanctuary in 2014 (USFWS 2014).



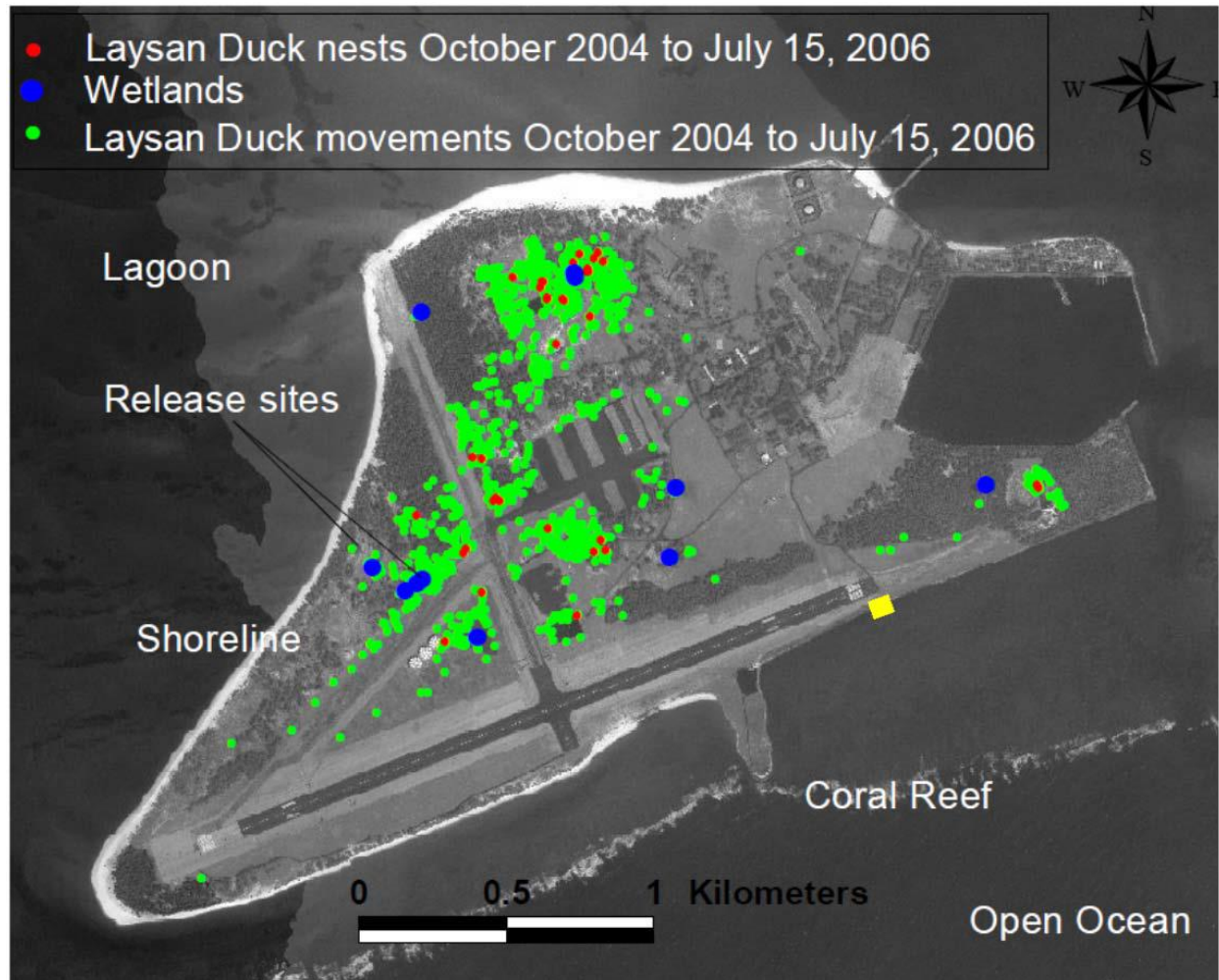


Figure 3-3 – Laysan duck wetlands, release sites, and movements on Sand Island.

Laysan ducks are year-round residents at Midway Atoll. Nesting and burrowing of seabirds in the project area is not common due to the harder substrate, however surveys for nests will be conducted prior to any repairs. Mitigation measures, including observers and shutdown protocols, will be used to reduce the risk of negatively impacting any Laysan ducks.

### 3.1.3 Laysan finch (*Telespiza cantans*), endangered

The Laysan Finch is endemic to Laysan Island, though it was successfully introduced to Southeast Island at Pearl and Hermes Reef in 1967 and a closely related form in the fossil record may once have been more widely distributed throughout the Hawaiian Islands. The population on Laysan Island appears to have decreased sharply after the introduction of rabbits in 1903, reducing it to an estimated 100 birds by 1923. The removal of the rabbits in 1923 led to a restoration of the population to about 5,000 individuals by the 1950's. The Laysan finch was listed under the ESA in 1967 (USFWS 1984).

This project has no upland components within Laysan finch habitat, and so is unlikely to affect them.



#### 3.1.4 Nihoa finch (*Telespiza ultima*), endangered

Closely related to the Laysan finch, the Nihoa finch is endemic to Nihoa Island. Estimates of Nihoa finch populations vary throughout the historic record, resulting either from variations in census techniques, changes in the island's carrying capacity, or fluctuations in population number due to other causes. Attempts to introduce the Nihoa finch to Tern Island and East Island were not successful. Like the Laysan finch, the Nihoa finch was listed under the ESA in 1967 (USFWS 1984).

This project has no upland components within Nihoa finch habitat, and so is unlikely to affect them.

#### 3.1.5 Nihoa millerbird (*Acrocephalus familiaris kingi*), endangered

The Nihoa millerbird was discovered on Nihoa Island in 1923, and no attempts have been made to transplant them to other areas. Census data from the 1960s and '70s estimate their total population at 200 to 600 individuals, which latter figure appears to be the carrying capacity of the island. Like the two finch species above, the Nihoa millerbird was listed under the ESA in 1967 (USFWS 1984).

This project has no upland components within Nihoa millerbird habitat, and so is unlikely to affect them.

#### 3.1.6 Green sea turtle (*Chelonia mydas*), Honu, threatened

Green sea turtles have faced a historic, worldwide decline resulting principally from the harvest of eggs and adults. Additional pressures result from incidental capture during fishing, and the disease fibropapillomatosis, which plays a significant role in turtle stranding. The green sea turtle was listed as endangered in a few breeding populations and threatened throughout the rest of its range in 1978. In 2016, the listing was revised to list three distinct population segments (DPSs) as endangered and eight as threatened. The Central North Pacific DPS that occurs in Midway remains threatened and is considered likely to become endangered within the foreseeable future. Critical habitat has been designated for green sea turtles in Puerto Rico, but none yet exists in the Pacific Ocean (NMFS 2016).

Green sea turtles have been observed in waters of Midway Atoll (including the nearshore project area), so all marine waters in the project area are potential habitat. Most green sea turtles are found swimming, foraging, nesting and basking in a few main areas; in the waters of the lagoon, along certain shorelines, in and around surrounding coral reefs, and in deeper pelagic waters. Turtles use these areas consistently throughout the year except for nesting, which is most likely limited to March through October. The highest concentration of basking green sea turtles occurs on 140-meter section of beach on Sand Island called "Turtle Beach" (Figure 3-4). The maximum number of turtles observed at one time was sixty (Klavitter et al. 2013a).

Juvenile turtles regularly feed on algae such as *Spyridia filamentosa* and *Centoceras clavulatum* growing on the iron seawalls and on wind-driven pelagic invertebrates that accumulated along the seawalls. Foraging on *Codium cuneatum* by subadults and adults takes place outside the atoll along the southern side. A small seagrass foraging pasture of *Halophila hawaiiiana* occurs inside the atoll

adjacent to the Cargo Pier. Turtles are routinely sighted between the Inner Harbor and the Cargo Pier. A sonic tag placed on an adult male revealed long periods of resting at 6-8 meters, probably under the Fuel and Cargo Piers (Balazs et al. 2001).



Figure 3-4 – Green sea turtle nesting and basking locations on Sand Island, Midway Atoll (USFWS unpub. data).

No turtle nesting had been documented at Midway Atoll until successfully hatched eggs were discovered on Spit Islet in July 2006. High surf uncovered the eggs, which probably hatched the previous year. Since then, there have been two confirmed green sea turtle nests on Sand Island; one on the east end of the north beach in 2007 and one on the beach between the cargo and fuel piers in 2008 (Figure 3-4) (USFWS unpub. data).

Sea turtles do not come ashore in the proposed work area due to the presence of the seawall, but they are seen occasionally in the nearshore project area (USFWS 2016). Mitigation measures, including observers and shutdown protocols, will be used to reduce the risk of negatively impacting any green sea turtles.

### 3.1.7 Hawksbill sea turtle (*Eretmochelys imbricata*), 'Ea, endangered

Hawksbill turtles are listed as endangered throughout their circumtropical range. Hawksbills are threatened by the loss of vulnerable coral reef communities, their primary feeding and resting

habitat. Critical habitat for hawksbills was designated in the coastal waters near Puerto Rico in 1998, but no critical habitat exists for the species in the Pacific Ocean, although they are known to nest in Hawai‘i, American Samoa, and Guam. Because of their migratory lifestyle and solitary nesting habits, hawksbill populations are difficult to estimate throughout their range (NOAA 2014).

Although rare, hawksbills do occur in the Northwestern Hawaiian Islands and one was observed at Midway Atoll in August 2011, therefore the species could potentially be in the action area (R. Born, USFWS unpub. data). The hawksbill turtle was observed and photographed in the lagoon in the location on the north side of the atoll known as “Reef Hotel” (Klavitter et al. 2013a).

Hawksbill sea turtles are seldom seen within the project area and would be protected by proposed mitigation measures (observers and shutdown protocols) if perceived.

#### 3.1.8 Loggerhead sea turtle (*Caretta caretta*), threatened

The loggerhead sea turtle was first listed as threatened under the ESA in 1978, along with the green and olive ridley sea turtles. In 2011, the loggerhead was grouped into nine DPSs, of which the population surrounding Midway is within the endangered North Pacific Ocean DPS. Turtles within this DPS forage in the central and eastern Pacific, returning to their natal beaches in Japan to reproduce, and then remain in the western Pacific. They are not known to cross the equator nor to mix with individuals from the Southern Pacific DPS and are genetically isolated from populations outside of the Pacific by an estimated one million years. The North Pacific Ocean DPS is threatened by elimination and degradation of nesting habitat, sea level rise, and incidental bycatch in fishing gear (NMFS 2011). Critical habitat has been designated for the Northwest Atlantic DPS of loggerhead turtles, but does not exist in the Pacific.

At least one loggerhead sea turtle with a satellite tag spent time in Refuge waters in 2003 (G. Balazs, NOAA, pers. comm.). Very little information is known about loggerhead sea turtles within Midway Atoll refuge waters. Since only one loggerhead has been recorded in the vicinity of Midway Atoll through satellite tagging studies, the species is most likely very uncommon within the refuge, probably only occasionally found in deep pelagic waters.

Loggerhead sea turtles are rarely seen within the Refuge and would be protected by proposed mitigation measures (observers and shutdown protocols) if perceived.

#### 3.1.9 Olive ridley sea turtle (*Lepidochelys olivacea*), threatened

Olive ridley sea turtles, though present within PMNM waters, are not known to nest or come ashore anywhere within the Refuge. They are noted to be difficult to distinguish from loggerhead turtles, even by researchers. A single nesting event was recorded on Maui in 1985, but the olive ridley is otherwise not known to nest within the U.S. or even commonly to nest on oceanic islands. They more commonly nest along continental margins using arribidas, or mass synchronized nesting. Sightings of olive ridley turtles in U.S. waters are rare, but increasing. Globally, their population numbers are high, but heavily exploited, and are therefore listed as threatened throughout their range and endangered among breeding populations on the Pacific Coast of Mexico (NMFS 1998).

A 2014 assessment by NFMS recommended reassessing the status (either up or down the hierarchy of ESA listings) of certain populations of olive ridley sea turtle following categorization into DPSs.



The species as a whole remains threatened by the impacts of poaching, incidental bycatch, and habitat degradation and development (NMFS 2014). Critical habitat does not exist for the olive ridley.

Olive ridley sea turtles are rarely seen within the Refuge and would be protected by proposed mitigation measures (observers and shutdown protocols) if perceived.

#### 3.1.10 Leatherback sea turtle (*Dermochelys coriacea*), endangered

Leatherback turtles in the Pacific Ocean are experiencing a dramatic drop in nesting numbers, and recent reports estimate the number of breeding females at between 2,700 and 4,500, though this number is uncertain due to a lack of information on the typical number of nests per female (NMFS 2013). Leatherback turtles have a variety of adaptations that allow them the widest foraging range of any living reptile, however nesting is confined to tropical and subtropical latitudes. Western Pacific leatherback populations nest in Malaysia, Indonesia, Papua New Guinea, and the Solomon Islands and are not known to breed with Eastern Pacific leatherbacks and are genetically distinct, though their ranges otherwise overlap. Significant threats to the leatherback result from poaching, development, marine debris, beach erosion, or low hatch rates (NMFS 2013). Western Pacific leatherback populations are estimated to have dropped by 80% in recent decades. Critical habitat for the leatherback turtle was established in the U.S. Virgin Islands in 1979 and along much of the west coast of the United States in 2012, although it does not extend to the Hawaiian islands nor to the project area (NMFS 2012).

One leatherback sea turtle washed up dead at Midway Atoll in the early 1990s (D. Williams, USFWS, pers. comm.). As only one leatherback has ever been observed at Midway Atoll, the species is most likely very uncommon within the refuge, probably only occasionally migrating through deep, pelagic waters. Recent satellite tagging studies show that leatherback turtles tagged on coast of California coast migrated through the Hawaiian archipelago on their way to an area just north of Australasia (Tagging of Pacific Pelagics (TOPP) 2006).

Leatherback sea turtles are rarely seen within the refuge and would be protected by proposed mitigation measures (observers and shutdown protocols) if perceived.

#### 3.1.11 Hawaiian monk seals (*Neomonachus schauinslandi*), 'Ilio holo I ka uaua, endangered

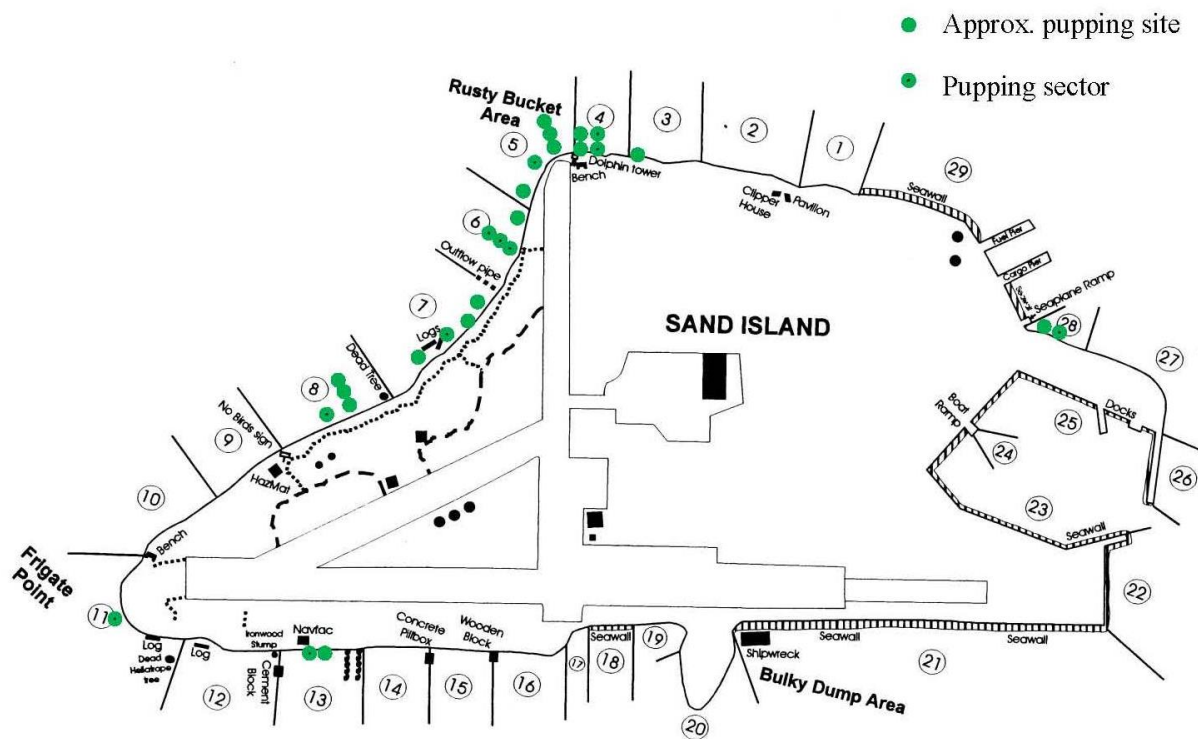
The Hawaiian monk seal was listed as an endangered species in 1976 with unanimous support from local government, interested organizations, and individuals. Hawaiian monk seal populations were never large (probably not exceeding 15,000 individuals prior to human presence in the islands), and human pressures extirpated their presence in the main Hawaiian Islands within the first century of Polynesian settlement. With the introduction of sealing vessels and the advent of dedicated sealing parties into the Northwestern Hawaiian Islands in the mid-20<sup>th</sup> century, Hawaiian monk seals were driven nearly extinct. Current estimates place the total population around 1,100 individuals, declining at 4% annually (NMFS 2016b).

Critical habitat for Hawaiian monk seals was revised in 1988 to include “all beach areas ...including the seafloor and all subsurface waters and marine habitat within 10 meters (m) of the seafloor, out to the 200-m depth contour line around” Midway Atoll, except Sand Island. In 2015, the critical habitat area was expanded to include Sand Island. The project repair area, as a hardened

shoreline that was in existence prior to the rule, does not meet the definition of critical habitat for the seals (NMFS 1988, 2015).

Hawaiian monk seals are found resting on the beaches of Sand, Eastern, and Spit Islands as well as portions of the emergent coral reef. About 60 Hawaiian monk seals were identified at Midway Atoll during 2011, including 40 adult and immature seals considered Midway residents, 10 adult and immature seals considered visitors from other atolls, and 10 pups (Klavitter et al. 2013a).

Hawaiian monk seals breed and haul out on the sandy beaches on the western and northern portions of Sand Island. The majority of the pups are born on Eastern and Spit Islands. Pupping on Sand Island is low, which may be related to the fact that humans live on Sand Island and are not allowed access to Spit or Eastern except for scientific research. In spite of this, data collected by NOAA personnel, FWS staff, and other cooperating researchers shows that at least twenty-seven full-term Hawaiian monk seal pups were born on Sand Island between 2003 and 2012, with most pups born in sectors 3-8 (Figure 3-5). Pupping levels have increased significantly since 1994, with a record number of 17 in 2004 (L. Laniawe, NOAA, pers. comm.). However, survivorship of juveniles is low.



*Figure 3-5 – Sand Island Hawaiian monk seal pupping locations 2003-2012, (provided by Thea Johanos, NOAA)*

Hawaiian monk seals are occasionally present in the waters adjacent to the sea wall and, as discussed above, may be subject to entrapment in the failing sea wall in its current condition. The proposed project will reduce the risk of entrapment, and observers and shutdown protocols will be used during construction to reduce the risk of injury through direct contact.

### 3.1.12 False killer whale (*Pseudorca crassidens*), endangered

The Main Hawaiian Islands (MHI) insular DPS of false killer whales was listed as endangered under the ESA in 2012, while the NWHI population was determined to be separate and distinct, but is not listed under the ESA. The MHI DPS is most threatened by interactions with local fisheries. Genetic differentiation between the two populations and offshore pelagic populations of false killer whales is sufficient to show that the populations do not interbreed, and the MHI population is unlikely to be readily replaced by other populations should it become extinct.

The MHI DPS is known to preferentially use habitat on “the northern coast of Moloka‘i and Maui, the north end of the Big Island, and a small region southwest of Lāna‘i,” (NMFS 2012b).

### 3.1.13 Sperm whale (*Physeter macrocephalus*), Palaoa, endangered

Sperm whales typically occur in deep pelagic waters and are uncommon in waters less than 300 meters. They were listed as endangered under the ESA in 1970, and no change to the listing has been made since that time. Estimated population of the Hawai‘i stock of sperm whales is between 2,500 and 3,400 (NMFS 2015b). There is no critical habitat designated for the sperm whale.

Only one sighting has been recorded at Midway Atoll. A sperm whale washed up dead on the surrounding coral reef in the late 1990s (N. Hoffman, USFWS, pers. comm.). The skeleton is currently on display outside the FWS NWR visitor center at Midway Atoll. Since only one sperm whale has ever been recorded at Midway Atoll, they are most likely only occasional visitors as they pass through refuge waters during migration.

### 3.1.14 Fin whale (*Balaenoptera physalus*), endangered

The fin whale was listed as endangered under the ESA in 1970 throughout its range. Hawai‘i populations of fin whales are believed unlikely to mix with two other North Pacific populations of fin whales in Alaska and California/Oregon/Washington. The eastern North Pacific population was estimated at 25,000 – 27,000 prior to whaling and 8,000 – 11,000 in 1973 (following ESA listing and the cessation of fin whale hunting in the Pacific in 1972) (NMFS 2011b). The 2010 stock estimate reports similar numbers, with only 101 – 174 in the Hawai‘i stock (NMFS 2014b). There is no critical habitat for the fin whale in the Pacific.

### 3.1.15 Blue whale (*Balaenoptera musculus*), endangered

Estimates of commercial whaling takes of blue whales are at least 9,500 between 1910 and 1965. Since protection by the International Whaling Commission in 1966 and listing under the ESA in 1970, insufficient data has been available to estimate population trends. Distribution of blue whale populations is not well understood, however recent studies suggest that blue whales from the central Pacific appear to summer southwest of Kamchatka, the Aleutian Islands, and the Gulf of Alaska and to spend winters in the western and central Pacific, including Hawai‘i. Presence of blue whales within the Hawaiian islands is registered through very infrequent sightings and through recordings of whale song. Blue whales are generally found further offshore than other whale species. The most recent estimates of individuals within the Hawai‘i exclusive economic zone (EEZ) are between 38 and 81 whales. Threats from fishery-related mortality or serious injury are

considered insignificant, but the effects of sonar and other noise sources are still a source of concern (NMFS 2014c).

### 3.1.16 Sei whale (*Balaenoptera borealis*), endangered

In a 2011 stock estimate, the population of sei whales remaining in U.S. Pacific waters was estimated at a minimum of 120 whales. Whaling catch data suggests a decline to about 8,600 individuals in 1974 from 42,000 in 1963 following decades of heavy harvests in Japanese waters that suggest the population was already below carrying capacity at that time. Sei whales were listed as endangered under the ESA in 1970. Relatively little data exists to provide information about species recovery since that time (NMFS 2012c).

### 3.1.17 North Pacific right whale (*Eubalaena japonica*), endangered

North Pacific right whales are among the rarest of all the large whale species. They were listed as endangered in 1970 and were reclassified from the initial ‘northern right whale’ listing to two separate species (North Pacific right whale and North Atlantic right whale, *E. glacialis*) in 2008. The combined historic North Pacific right whale population is unknown, but is estimated in the tens of thousands. Current estimates are also uncertain, but are between 400 and 500.

Historic range of the North Pacific right whale likely included most of the North Pacific, however sightings near Hawai‘i were rare even then and likely represented ‘vagrant individuals’. Contemporary sightings extend as far south as Baja, but are rare south of high latitudes. Critical habitat has been established in the Bering Sea and the Gulf of Alaska.

### 3.1.18 Humpback whale (*Megaptera novaeangliae*), Koholā, delisted

Humpback whale populations in the North Pacific were severely impacted by whaling during the early 1900s, reducing the population to an estimated 1200 – 1400 individuals. The population has since made a significant recovery and is estimated at around 20,000.

Roughly half of all North Pacific humpback whales (10,000 – 12,000) are found within the Hawai‘i breeding area during the fall season (NMFS 2016c). Results from a 2011 study recorded humpback whales in the Northwest Hawaiian Islands at a rate similar to their presence within the main islands, a trend not previously recorded (Lammers et al. 2011). The more northern atolls, including Kure, Midway, Pearl, and Herms showed notably less activity than the other islands, with peaks in February and March, possibly as a result of whales passing through to seek warmer waters.

Following a reassessment of DPSs by NMFS, the Hawai‘i DPS of humpback whales was delisted in September, 2016 (NMFS 2016c). There is no critical habitat designated for the humpback whale. Humpback whales are not discussed further due to the delisted status.

### 3.1.19 Kāmanomano (*Cenchrus agrimonioides* var. *laysanensis*), endangered plant

Populations of kāmanomano (an endemic perennial grass recognized as variety *laysanensis* in the Northwestern Hawaiian Islands), formerly collected on Midway Atoll, were last seen in 1973 and are now considered extinct (USFWS 2003). Var. *laysanensis* differs from its MHI counterpart *C. agrimonioides* var. *agrimonioides* by wider leaves, longer stems, and larger burs. Threats to kāmanomano included grazing and habitat destruction by feral ungulates and competition from



introduced species (USFWS 1999b). No impact to kāmanomano is anticipated from this project, as it is believed extinct.

### 3.1.20 Lo'ulu (*Pritchardia remota*), Nihoa fan palm, endangered plant

Lo'ulu is among three species endemic to Nihoa that were listed under the ESA in 1996. At the time of listing, they were limited to two extant populations on Nihoa. Since then, this palm has been outplanted around the Hawaiian Islands, and fossil records show that it may once have been more widespread throughout the area (USFWS 1996).

In 2009, approximately 300 seeds were brought to Midway for planting in the Service's greenhouse for outplanting within the atoll. A few have survived on both Sand and Eastern Islands. None of the plantings are within the project area, so no impact is anticipated from this project.

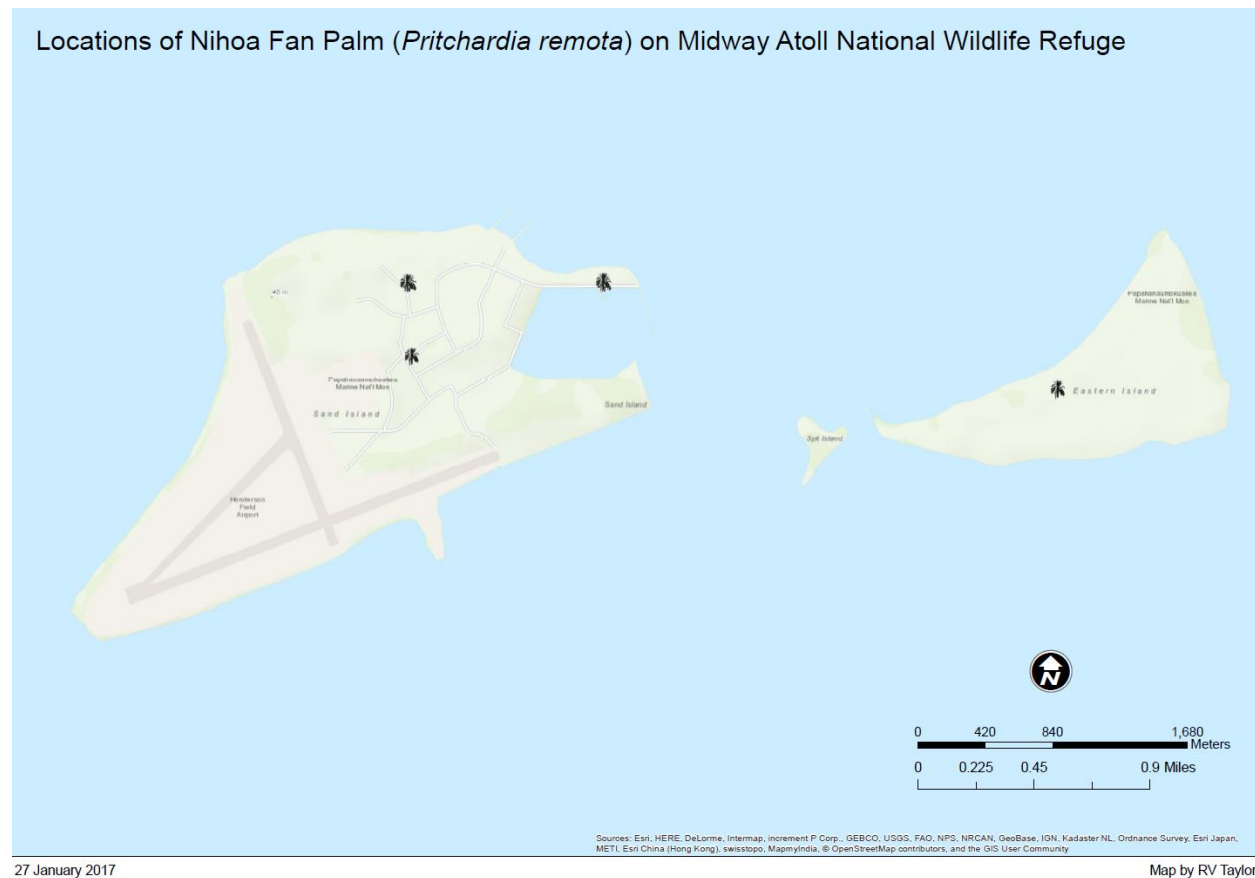


Figure 3-6 – Lo'ulu (*Pritchardia remota*) locations within Midway Atoll, January 27, 2017

### 3.1.21 Pōpolo (*Solanum nelsonii*), endangered plant

Pōpolo was included as an endangered species under the ESA in September, 2016. Historically present on Hawai'i, Ni'ihau, Maui, Nihoa, Laysan, Pearl, Hermes, and Green Islands, pōpolo has been extirpated from Ni'ihau and Maui, but has been introduced to Moloka'i and parts of Midway Atoll.

Pōpolo was thought to be extirpated at Midway Atoll, but a small population was discovered on Spit Island in 1996 by FWS (Starr and Martz 1999). Seeds were taken from the plants, propagated

in the greenhouse on Sand Island, and out-planted in and around wetlands on Sand and Eastern Islands, in order to reforest areas impacted by the clearance of invasive ironwood trees. The plants were not thought to have established on Sand Island, although 2 large plants were discovered on the southeast side of the island in January of 2012 (Klavitter 2013).

In 2016, pōpolo were among the plants selected for revegetation of a section of ironwood forest cleared under recommendation by the FAA to protect visibility during the approach of aircraft to the runway (Dur-Schultz 2016). It will not be necessary for crew or equipment to enter the revegetation area during the repairs. No impact to pōpolo is anticipated from this project.

### **3.1.22 Various endangered endemic NWHI plants**

Four additional plant species known historically from the NWHI are listed as endangered. All of these species occur in uplands on other islands not likely to be affected by this project, and will not be discussed in further sections of this assessment.

Coastal Flatsedge (*Cyperus pennatiformis*) is a short-lived perennial in the sedge family with two varieties, var. *bryanii* and var. *pennatiformis*. Var. *bryanii* is now found only on Laysan, while var. *pennatiformis* has populations on Kaua‘i, O‘ahu, east Maui, and Hawai‘i (USFWS 1994).

Nihoa carnation (*Schiedea verticillata*) and *Amaranthus brownii* have probably always been rare and largely restricted to Nihoa (USFWS 1999b). They were listed under the ESA along with the lo‘ulu in 1996. (USFWS 1996)

‘Ohai (*Sesbania tomentosa*) is the only member of the pea family endemic to the Hawaiian Islands. In the MHI, ‘ohai was historically found (and still occurs) on Ni‘ihau, Kaua‘i, O‘ahu, Moloka‘i, Lāna‘i, and Kaho‘olawe. In the NWHI, ‘ohai is still found on Nihoa and Necker Island (Mokumanamana) (USFWS 1999b).

## **3.2 Proposed species and/or proposed critical habitat within the action area:**

No proposed species or critical habitat occur within the repair area.

## **3.3 Candidate species within the action area:**

No candidate species or critical habitat occur within the repair area.

## **3.4 Essential Fish Habitat**

Midway Atoll is identified the Western Pacific Fishery Management Council as Essential Fish Habitat (EFH) for several management unit species. Of key relevance to this project is the designation of EFH for Coral Reef Ecosystems, including the water column to 1000 m and the benthic substrate to a depth of 400 m from the shoreline to the exclusive economic zone (EEZ) (NOAA 2013).

The 2016 Fish and Wildlife Coordination Act (FWCA) draft report characterizing habitat and identifying key species in the project area found a majority of reef flat habitat (as described above). Ninety-seven fish species from twenty-seven families of the order *Perciformes*, class *Actinopterygii* were identified in the survey. Nine coral species were identified from the families *Acroporidae*, *Faviidae*, *Pocilloporidae*, and *Poritidae*. Coral was found both on benthic and

artificial substrate. No ESA-listed coral species were found. The survey also identified thirty-two invertebrate species and twenty-eight marine plant species (USFWS PIFWO 2016).

Most of the offshore substrate in the project area is unconsolidated sediment, and the high level of wave energy contributes to make these areas poor coral habitat. The harder substrate of the sheet pile walls and of areas where riprap was previously placed to control erosion are artificial habitat, but show more abundant coral colonization (USFWS PIFWO 2016). The removal of the sheet pile wall and placement of armor rock will result in the permanent loss of EFH.

Coral translocation will be carried out according to the coral mitigation plan accompanying the project EA. The coral translocation areas and rock revetment will be monitored to survey for recruitment of coralline algae, corals, invertebrates, and fish. Alternative mitigation will be determined cooperatively between FWS NWR and NOAA if the translocation is not successful.

## **4 Environmental Baseline Conditions**

### **4.1 Hawaiian Archipelago**

Within the Pacific basin are underwater plate boundaries that define long mountainous chains, submerged volcanoes, islands, and archipelagos that influence the movement of water and the distribution of marine organisms. The Hawaiian archipelago includes the waters surrounding the Hawaiian Islands (including the MHI and NWHI) to a seaward extent of approximately 24 nautical miles. Within the archipelago, the Insular Pacific-Hawaiian Large Marine Ecosystem (LME) has a surface area of approximately one million km<sup>2</sup>, including a range of islands, atolls, islets, reefs and banks (WPRFMC 2009). This area contains about one percent of the coral reefs and sea mounts in the world and four major estuaries (Aquarone and Adams 2008).

The Hawaiian archipelago experiences relatively uniform and tropical meteorological and oceanographic conditions. The circulation of ocean water in the Hawaiian archipelago and throughout the Pacific Ocean is a complex system primarily driven by solar radiation that results in wind being produced from the heating and cooling of ocean water and the evaporation and precipitation of atmospheric water (WPRFMC 2009).

The Hawaiian archipelago is seasonally influenced by the Subtropical Front (STF), which corresponds to a shallow subtropical countercurrent that transects the LME in winter and summer (Kobashi et al. 2006). The STF plays an important role in the regional ecology of the Hawaiian archipelago, defining a major trans-ocean migration path and feeding grounds for many species.

Additionally, the Hawaiian archipelago is subject to high wave energy produced from weather systems generated off the Aleutian Islands and other areas of the North Pacific. Such waves can have major effects on nearshore environment and may break off coral, move underwater boulders, shift large volumes of sand, and erode islands. Breaking waves from surf generated by Pacific storms influence the structures of exposed reef communities; extreme wave events are believed to play fundamental roles in forming and maintaining the spatial and vertical distributions of corals, algae, and fishes in coral reef ecosystems throughout the Hawaiian archipelago (WPRFMC 2009).

Increasing vessel traffic globally, and through the Hawaiian archipelago in particular, increases the risk of interactions between ESA-protected marine species and humans. Both the risk of vessel strike and the increase in noise levels contribute to the overall risk factors facing these species. The PMNM permit for this project limits the number of allowed vessel deliveries. The use of vessel-tracking protocols and strike avoidance measures will also help to offset some of these risks.

### **4.2 PMNM Monument**

The Northwestern Hawaiian Islands Marine National Monument was established by Presidential Proclamation 8031 on June 15, 2006 under the authority of the Antiquities Act (16 U.S.C. 431-433), protecting array of natural and cultural resources (71 FR 36443). In 2007, it was given its Hawaiian name, Papahānaumokuākea, honoring island ancestral connections, by the Northwestern Hawaiian Islands Native Hawaiian Cultural Working Group (72 FR 10031). The Monument was expanded in 2016 to include 1,508,870 km<sup>2</sup> (81 FR 60227). Along with dozens of shipwrecks and downed airplanes capturing U.S. history from early days of exploration and whaling through World War II and the Vietnam War, the Monument contains the Battle of Midway Memorial, and

is a sacred cultural, physical, and spiritual place for the Native Hawaiian community. The more than 75 seamounts contained within the monument are home to ‘biodiverse hotspots’ that provide habitat for a diverse range of ecologically unique species (81 FR 60227).

Proclamation 8031, 8112, and 9478 and accompanying regulations (71 FR 51134, 50 CFR Part 404) require all persons to obtain a PMNM permit in order to enter the NWHI and conduct a limited range of activities. A five-year permit for the activities described in this BA was issued on August 22, 2016, and it lists the activities allowed for this action and the mitigation requirements required by the Monument Co-Trustees. A new permit will be required for any activities following its expiration on December 31, 2020.

Among the major environmental factors affecting PMNM, marine debris and entrapment hazards are a severe risk to endangered and threatened species. Marine debris continues to accumulate at an estimated rate of 52 tons/year (Dameron et al. 2007). Between 1996 and 2006, an extensive multiagency debris removal program led by the Pacific Islands Fisheries Science Center removed 511 metric tons of derelict fishing gear from various sites within the NWHI (Friedlander et al., 2005). Replacement of the failing sheet pile wall, as well as removal of debris unearthed during construction, may reduce the risk of future entrapment along this section of Sand Island’s shoreline.

### **4.3 RSA and Runway Seawall Areas**

The current steel sheet pile seawall protecting Henderson Field and the RSA was installed by the U.S. Navy in 1957-58 to accommodate the landing strip and its approaches. The installation decreased the amount of bottom habitat for fish and invertebrates and shoreline for Hawaiian monk seals and green sea turtles to haul out, pup, and nest. The iron in the steel seawall has also caused periodic blooms of the benthic cyanobacterium *Hormothamnion enteromorphoides*, which seem to have both positive and negative effects on coral growth within the atoll (Cover 2011).

The metal sheet pile sections needing repair have been severely corroded by the marine environment, causing large gaps. In its present state, the seawall provides an entrapment hazard for Hawaiian monk seals and green sea turtles. Seals and turtles swimming or foraging near the seawall breach are at risk of waves washing them through the gaps in the seawall, where they could become trapped. Although this has not been observed at Midway Atoll, animals have been trapped behind the failing seawall at Tern Island, French Frigate Shoals Atoll (USFWS unpub. data).

A previous repair effort was made in 2014, addressing a 75-foot gap in the seawall. A 100-foot section was replaced with armor rock revetment similar to the current proposed project. The 2016 FWCA site survey revisited this section and found that the gradual slope appeared to be a better wave absorber than the previous vertical sheet pile wall. Albatross chicks and seabird burrows were present within 10 feet of the repairs. During this survey, the priority areas for a proposed 2017 repair effort were noted to be in use for seabird breeding, nesting, feeding, and growth until fledging. A large hole covered with metal mesh was viewed at one of the two sites that could pose an entrapment threat (USFWS PIFWO 2016).

## **5 Effects of the Action**

The most likely potential impacts to ESA-listed species are temporary disturbance due to human activities near the seawall. Seabirds, seals, and sea turtles may be disturbed by human activity associated with the seawall repair as they nest, swim, or forage within the immediate area (Gerrodette 1990; Ragen 1997). Planned measures to reduce impacts are fully described in the Implementation Plan, but include schedule limitations for the construction season, pre-construction surveys to assess and mitigate potential habitat degradation, and the presence of observers during construction with the authority to call a project shutdown should any threatened species enter within a specified radius of the site. These and other measures will reduce the potential for negative effects to protected species.

### **5.1 Increased Human Activity, Light, and Noise**

The increase in human activity and operation of heavy equipment may disturb nests established in or near the construction site. The use of artificial lights near shore can confuse certain protected species within that environment, leading to injury or mortality. The placement of the armor rock into the water by heavy equipment may disturb seals and turtles by increasing noise levels and turbidity.

Yearly repair activities will be short in duration and scheduled to avoid the seabird nesting season. No artificial lighting will be used during this project. Observers will be present during all construction activities to order shutdown, thereby reducing the risk of exposing protected species to loud noise.

### **5.2 Injury From Construction Activities**

Seabirds, seals, and sea turtles within the construction site are at risk from injury from heavy equipment and construction materials. Construction will be scheduled to avoid the seabird nesting season, and pre-construction surveys will be performed to insure the project site is free of any protected species prior to transporting materials or beginning any repair work. Seals and turtles are not able to haul out because of the seawall, and observers will be positioned so as to monitor the nearshore environment. Construction activities will be delayed well before any protected species is close enough to the project area to risk physical injury, and so is an unlikely effect of the project.

### **5.3 Increased Turbidity**

All materials placed in the water will be cleaned of sediment and potential invasive species prior to arrival at Midway Atoll. A silt curtain will be used during construction to contain any sediments that may be disturbed during construction. Coral colonies within the construction site will be translocated according to the separately-developed coral mitigation plan. Increased turbidity will be mitigated and is unlikely to adversely affect any protected species.

### **5.4 Essential Fish Habitat Effects**

The main impact from the repairs of the entire length of the seawall will be the permanent loss of 6.6 acres of essential fish habitat. But, since the habitat lost is unconsolidated sandy bottom, and biological surveys have shown that few coral colonies have settled in these areas. The project will

result in the need to relocate coral colonies growing on the steel plates and in the immediate seafloor from each construction site and the temporary displacement of fish, and macroinvertebrate from the vicinity of each repair. The coral mitigation plan will provide methodology for translocating and monitoring of colonies of coral from each repair section, and NMFS and the FWS will engage in discussions to determine adequate compensatory mitigation (if necessary) for the permanent loss of EFH and the possible mortality of coral colonies relocated. Prior to each construction effort, macroinvertebrates and fish within the construction site will be manually relocated or coaxed to move elsewhere, as appropriate.

The newly constructed armor rock revetment will eventually provide habitat for corals, fish, and macroinvertebrates which will help to offset the permanent loss of EFH. Repopulation by these species will be monitored by the Service following construction.

### **5.5 Air Quality and Emissions**

The levels of dust and emissions generated from materials shipment and construction activities will be minimal and are unlikely to adversely affect any protected species.

### **5.6 Ship Strikes**

At least five endangered whale species are found in the offshore waters of Midway and the Hawaiian Islands. While unlikely to be affected by the seawall repair or any actions contained within the atoll, each of these species is at risk from ship strike. Deliveries of materials and equipment will implement recommended strike avoidance procedures and any additional measures recommended in the PMNM permit to avoid the risk of negative affects to endangered whale species.

### **5.7 Debris Removal**

Debris is present within the seawall itself and within the immediate vicinity, dating from the seawall construction and earlier. Materials encountered during construction will be removed and properly disposed of, thereby reducing the potential of negative effects to protected species from debris ingestion or entrapment.

### **5.8 Reduced Risk of Entrapment**

The current condition of the seawall presents a risk of entrapment to seabirds, seals, and sea turtles, as demonstrated at other similar facilities. Repair of the seawall will remove the risk of these animals becoming trapped behind the corroded seawall. The newly constructed armor rock revetment may also improve access to the nearshore environment for these species without the obstruction of the failing seawall to intervene.



## 6 Conclusions

### 6.1 ESA Conclusions

In conclusion, we have determined that the proposed action may affect, but is not likely to adversely affect the following species:

Table 6-1 – Species may be affected, but unlikely to adversely effect

Species	ESA Listing Status
<b>Short-tailed albatross</b> ( <i>Phoebastria albatrus</i> )	Endangered
<b>Laysan duck</b> ( <i>Anas laysanensis</i> )	Endangered
<b>Green sea turtle</b> ( <i>Chelonia mydas</i> )	Threatened (Central North Pacific DPS)
<b>Hawksbill sea turtle</b> ( <i>Eretmochelys imbricata</i> )	Endangered
<b>Loggerhead sea turtle</b> ( <i>Caretta caretta</i> )	Endangered (North Pacific Ocean DPS)
<b>Olive ridley sea turtle</b> ( <i>Lepidochelys olivacea</i> )	Threatened
<b>Leatherback sea turtle</b> ( <i>Dermochelys coriacea</i> )	Endangered
<b>Hawaiian monk seals</b> ( <i>Neomonachus schauinslandi</i> )	Endangered
<b>Hawaiian monk seals</b> <b>Critical Habitat</b>	N/A
<b>False killer whale</b> ( <i>Pseudorca crassidens</i> )	Endangered (Main Hawaiian Islands Insular DPS)
<b>Sperm whale</b> ( <i>Physeter macrocephalus</i> )	Endangered
<b>Fin whale</b> ( <i>Balaenoptera physalus</i> )	Endangered
<b>Blue whale</b> ( <i>Balaenoptera musculus</i> )	Endangered
<b>Sei whale</b> ( <i>Balaenoptera borealis</i> )	Endangered

We have determined that the proposed action is not likely to affect the following species:

**Table 6-2 – Species not likely to be affected**

<b>Species</b>	<b>ESA Listing Status</b>
<b>Laysan finch</b> ( <i>Telespiza cantans</i> )	Endangered
<b>Nihoa finch</b> ( <i>Telespiza ultima</i> )	Endangered
<b>Nihoa millerbird</b> ( <i>Acrocephalus familiaris kingi</i> )	Endangered
<b>Kāmanomano</b> ( <i>Cenchrus agrimonioides var. laysanensis</i> )	Endangered
<b>Lo'ulu, Nihoa fan palm</b> ( <i>Pritchardia remota</i> )	Endangered
<b>Pōpolo</b> ( <i>Solanum nelsonii</i> )	Endangered

## 6.2 EFH Conclusions

We have determined that the proposed action will negatively affect EFH due to a permanent loss of 6.6 acres of EFH, the need to relocate coral colonies from the construction sites (and possible mortalities associated with this action), and the temporary displacement of other fish and wildlife resources. The coral mitigation plan (which includes monitoring) to be put into place will help to minimize the negative impacts, and the new seawall which will be put into place will provide additional hard surface for coral settlement in the future, but NMFS and the FWS will engage in discussions to determine if any additional compensatory mitigation will be required due to the impacts from the seawall repairs.

Initiating Office:

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Refuge Manager, Midway Atoll National Wildlife Refuge

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Date

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